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TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

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PCT/EP99/09312	30 November 1999	30 November 1998

TITLE OF INVENTION
METHOD AND COMMUNICATIONS SYSTEM FOR TRANSMITTING DATA FOR A COMBINATION OF SEVERAL SERVICES VIA JOINTLY USED PHYSICAL CHANNELS

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Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).
4. ☐ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☒ is attached hereto (required only if not communicated by the International Bureau).
   b. ☐ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ An English language translation of amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 16 below concern other documents or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
    ☒ English translation of International Search Report
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May 23, 2001 Samantha Bell Samantha Bell

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U.S. APPLICATION NO. (IF KNOWN) 09/856652	INTERNATIONAL APPLICATION NO. PCT/EP99/09312	ATTORNEY'S DOCKET NUMBER 12758-027001

17. ☒ The following fees are submitted:

CALCULATIONS PTO USE ONLY

Basic National Fee (37 CFR 1.492(a)(1)- (5)):

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **$1000**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **$860**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$710**

International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$690**

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) **$100**

ENTER APPROPRIATE BASIC FEE AMOUNT =	$860.00	
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Claims	Number Filed	Number Extra	Rate		
Total Claims	10 - 20 =	0	x **$18**	$0.00	
Independent Claims	2 - 3 =	0	x **$80**	$0.00	
MULTIPLE DEPENDENT CLAIMS(S) (if applicable)			+ **$270**	$0.00	

TOTAL OF ABOVE CALCULATIONS =	$860.00	
☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.	$0.00	
SUBTOTAL =	$860.00	
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Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +	$40.00	
TOTAL FEES ENCLOSED =	$900.00	
	Amount to be refunded:	$
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a. ☒ A check in the amount of $900.00 to cover the above fees is enclosed.
b. ☐ Please charge my Deposit Account No. 06-1050 in the amount of $0.00 to cover the above fees. A duplicate copy of this sheet is enclosed.
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NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b) must be filed and granted to restore the application to pending status.

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Description

Method and communication system for transmitting data for a combination of a plurality of services via jointly used physical channels

The invention relates to a method and a communication system for transmitting data for a combination of a plurality of services via jointly used physical channels, in particular in mobile radio systems having broadband radio channels.

A communication system provides one or more physical transmission channels for transmitting data between a data source and a data sink. The transmission channels may be of a wide variety of types, e.g. for cable-conducted transmission using electrical or optical signals or for radio transmission via a radio interface using electromagnetic waves. The text below describes radio transmission, in particular, without limiting the general nature of the field of use of the invention.

Radio transmission is used in mobile radio systems in order to set up a connection to nonstationary subscriber terminals. A mobile station in a mobile radio system is such a nonstationary subscriber terminal. Within the network coverage, the mobile station can request a connection from any desired locations, or a connection can be set up to the mobile station. The most common mobile radio system is GSM (global system for mobile communications), which was developed for a single service, for voice transmission purposes. The GSM mobile radio system is called a 2nd generation system.

By contrast, the successive mobile radio generation, the 3rd mobile radio generation, which is currently being standardized in Europe under the name UMTS (Universal System for Mobile Communications),

has provision for a plurality of services, which are to be transmitted within a transmission protocol via jointly used physical channels.

The standardization documents ETSI SMG2/UMTS L23 expert group, Tdoc SMG2 UMTS-23 257/98, dated 10.6.1998, Tdoc SMG2 508/98 and Tdoc SMG2 515/98, dated 11.16.1998, give an overview of the present state of development of standardization and, in particular, an overview of the requirements in terms of how a transmission protocol can support the transport of data for a plurality of services.

The use of a common physical channel for transmitting data for a plurality of services presupposes that a unique mapping specification indicates the allocation of the services to different segments of the physical channel. By way of example, a physical channel is defined by a frequency band, a spread code (CDMA code division multiple access) and, if appropriate, a time slot within a frame.

The following terms are used to describe the mapping specification:

Transport format (TF):
A transport format defines a data rate, a coding, scrambling (interleaving), a data rate adjustment by puncturing and an error protection specification for a transport channel for a service.

Transport Format Set (TFS):
This denotes a set of possible transport formats which are permitted for a specific service.

Transport Format Combination (TFC):

This term indicates a possible combination of the transport formats for the various services which are mapped onto a common physical channel.

Transport Format Combination Set (TFCS):
This denotes a set of possible TFCs as a subset of all TFCs which are permitted for a specific connection.

Transport Format Combination Identifier (TFCI):
This information item indicates the currently used combination of the transport formats within the TFCs.

Examples relating to the transport formats can be found in ETSI SMG2/UMTS L23 expert group, Tdoc SMG2 UMTS-23 257/98, dated 10.6.98, pp. 14-16.

In order to be able to select the currently used combination of the transport formats for the various services in line with requirements, the TFC needs to be able to be changed and hence the TFCI needs to be signaled regularly. This signaling ties up transmission capacity, however. The greater the number of possible combination options (TFCS), the more capacity is required for signaling.

The invention is based on the object of specifying a method and a communication system which reduce the required signaling capacity without limiting the number of combination options and the selection thereof. This object is achieved by the method in accordance with the features of claim 1 and by the communication system having the features of claim 10. Advantageous developments can be found in the dependent claims.

The invention utilizes the fact that, irrespective of the combination of the transport formats, a total data rate for all services is known to the receiver. This total data rate is obtained from a previous resource

allocation (number of spread codes and/or time slots, spread factor etc.), as a result of "blind detection" at the reception end (establishment of the data rate or of the spread factor) during detection or as a result of reception-end recognition of the currently used resources within the pool of allocated resources (e.g. during DTX discontinuous transmission). The total data rate determined is an implicitly available information item for the combination of the transport formats, since only particular combinations are possible for a given total data rate. This exclusion of combination options for a given total data rate is utilized to reduce the signaling requirement.

Hence, at the transmission end, just one partial information item relating to the combination of the currently used transport formats is produced and is signaled to the transmission end, which uses a binary coding having a number of places which is reduced in comparison with the total amount of permitted combinations. If it would normally be possible to signal only 2^n combination options using n bits, then, according to the invention, this number can be significantly increased, or the bits required for signaling can be reduced. This lowers the transmission capacity required for signaling. This saved transmission capacity can be used for transmitting useful data and hence for increasing the performance of the communication system.

The total data rate taken into account when determining the combination of the transport formats indicates a bit rate or symbol rate before or after channel coding. The total data rate denotes the sum of all data rates of the physical channels to which the partial information item relates. The symbol rate after channel coding indicates the rate on the physical channel or the physical channels (e.g. the radio interface).

Alternatively, the total data rate can also mean the useful bit rate. Hence, a common reference variable for the total data rate first needs to be defined at the

transmission and reception ends. The symbol rate is determined by the spread factor.

In accordance with one advantageous development of the invention, data transmission takes place via a radio interface of a radio communication system. In radio communication systems, e.g. UMTS, the transmission resources are particularly scarce. The number of available frequency bands is limited, and each operator can use only a certain portion thereof. Nevertheless, high data rates (up to 2 Mbit/s) need to be offered for many services. The invention provides particular advantages for such a radio communication system.

A particularly flexible strategy for allocating transmission capacities to connections is made possible when a radio interface is formed by a broadband frequency channel (e.g. 5 MHz), with signals being transmitted simultaneously in a plurality of physical channels which can be separated by spread codes and additionally by time slots. By modifying the spread code or by allocating additional spread codes, the transmission capacities can rapidly be matched to the requirement. The invention is suitable both for use in FDD (frequency division multiplex) mode and in TDD (time division multiplex) mode in a radio communication system.

For particularly rapid signaling, the partial information item is transmitted in each frame of the data transmission of the common physical channel. This also changes the chosen combination very rapidly. The joint transmission of data for a plurality of services can be based on one or more channels. With a plurality of jointly used channels, the data for a plurality of services are mapped onto a coded common transport channel, and the data of the coded common transport

channel are in turn split uniformly over a plurality of physical channels.

Illustrative embodiments of the invention are explained in more detail using the appended drawings, in which

Figure 1	shows a schematic illustration of a radio communication system,
Figure 2	shows a layer model of the transmission protocols,
Figures 3, 4	show data for various services mapped onto common physical channels,
Figures 5, 6	show tables containing a mapping specification taking into account the total data rate, and
Figure 7	shows data transmission in frames with in-band signaling.

The mobile radio system shown in Figure 1 as an example of a radio communication system comprises a multiplicity of mobile switching centers MSC which are interlinked and set up access to a landline network PSTN. In addition, these mobile switching centers MSC are connected to at least one respective device RNM for controlling the transmission resources. Each of these devices RNM permits, in turn, a connection to at least one base station BS.

A base station BS can set up a connection to subscriber stations, e.g. for mobile stations MS or other mobile and stationary terminals, via a radio interface. Each base station BS forms at least one radio cell. Figure 1 shows connections for transmitting useful information between a base station BS and mobile stations MS. Within a connection V1, data for, by way of example, three services S (S1, S2, S3) are transmitted within one or more physical channels Phy CH, and signaling information, e.g. the allocated radio system resources for a connection V1, is transmitted via a monitoring channel FACH (Forward Link Access Channel) which accompanies the connection.

An operation and maintenance center OMC provides monitoring and maintenance functions for the mobile radio system or for parts thereof. The functional scope of this structure can be transferred to other radio communication systems in which the invention can be used, in particular for subscriber access networks with wireless subscriber access.

In the radio communication system shown in Figure 1, both the base stations BS and the mobile stations MS are provided with data transmission means, reception means and signaling means which communicate with one another. The data transmission means are used for transmitting data for a combination of a plurality of services S via the currently available common physical channels Phy CH. The signaling means determine partial information items TFCI for the selected combinations of transport formats for services S1, S2, S3 and perform in-band signaling of the transport formats TF.

The layer model shown in Figure 2 shows the protocols of the radio communication system divided into three layers.

Layer 1: physical layer for describing all the functions for bit transmission via a physical medium (e.g. coding, modulation, transmission power monitoring, synchronization etc.),

Layer 2: data link layer for describing the mapping of data onto the physical layer, and monitoring thereof,

Layer 3: network layer for controlling the resources of the radio interface.

Other details can also be found in ETSI SMG2/UMTS L23 expert group, Tdoc SMG2 508/98, dated 11.16.1998, pp. 9-25 (Figure 11). Layer 3 stipulates the TFCS for a connection, while layer 2 selects a combination (of a TFC) which is signaled in-band using a TFCI, as shown later.

The parameter exchange between Layers 1 and 2 supports the functions of transferring frames with data for Layer 2 via the radio interface and of displaying the status of Layer 1 to higher layers. The parameter exchange between Layers 1 and 3 supports monitoring of the configuration of the transmission in Layer 1 and generates system information relating to Layer 1.

In this case, the mapping of the data for various connections S onto a common physical channel Phy CH corresponds to the interaction of Layers 1 and 2.

In accordance with Figures 3 and 4, transport formats TF need to be signaled for currently transmitted services.

Figure 3 shows, as an illustration of function, a coding and multiplex unit which maps data from a plurality of data channels DCH (which each correspond to the data for a service S1, S2, S3) onto a coded common transport channel CCTrCH. In this context, mapping is a specification governing the bit pattern which is to be used for entering the data into a serial data sequence. A demultiplexing/allocation means distributes the data for the coded common transport channel CCTrCH over a plurality of physical channels Phy CH. The physical channels Phy CH are thus always used to transmit data for a plurality of services S1, S2, S3 in each case. A physical channel Phy CH is not allocated to one service S1, S2 or S3 alone, but rather is allocated to the coded common transport channel CCTrCH with all its services S1, S2, S3.

Since the reception end needs to reconstruct this mapping and needs to read the data from the physical channels Phy CH and present them again in separate transport channels DCH for the services, signaling is

necessary. This signaling in the form of a partial information item TFCI depicts the currently

used combination of the transport formats TF for the services. Which combinations are permitted for the connection (TFCS) has been agreed for connection setup.

Figure 4 shows the mapping in a slightly modified form, with it becoming clearer that the partial information item TFCI need be signaled only when physical channels Phy CH are jointly used by a plurality of services S1, S2, S3. If a service S1 or S2 or S3 uses one physical channel Phy CH exclusively, then signaling of the partial information item TFCI can be dispensed with.

The services S may be of a very wide variety of types. Thus, by way of example, S1, S2 are services with high data rate dynamics, e.g. S1 is video transmission and S2 is an Internet link, and S3 is a service with low data rate dynamics, e.g. voice transmission.

In accordance with a first illustrative embodiment, the selected combinations TFC of the transport formats TF are stipulated in line with Figure 5, with two different total data rates GR1, GR2 being possible. For a partial information item TFCI with binary coding of "0000", the total data rate GR is of no importance. The combination TFC coded with "0001" is always TFC0. For the partial information item "0001", the total data rate GR1 or GR2 is used to distinguish between two different combinations TFC1 and TFC2. Hence, the number of combinations TFC coded with 4 bits is greater than 2^4, or, from another point of view, a given number of combinations TFC can be coded with fewer bits. However, it is likewise within the scope of the invention for codings other than binary codings to be used.

A fully coded combination contains the information relating to the total data rate GR. This information is redundant, however, and, in accordance with the invention, is replaced by a partial information item TFCI.

A second illustrative embodiment, shown in Figure 6, assumes a total of five different total data rates GR, with the stages between the total data rates GR1 to GR5 being identical to the stages of the data rates for the transport formats TF, for the purpose of simplification. Two services S1, S2 are supported which can each use four different transport formats TF11 to TF14 and TF21 to TF24. The mapping specification requires only one bit as partial information item TFCI for eight possible combinations. The symbol "-" means that this value can be random.

Another illustrative embodiment may be mentioned briefly:

If the TFCS comprises K different services S_i, where i=1..K, for which, in each case, L_i permitted transport formats TF are defined, then

$$TFC = (TF_{i1}, TF_{i2}, ..TF_{iLi}).$$

Within the context of the invention, the partial information item TFCI indicates only the combination options for the services 1 to K-1, while the transport format TF for the service K can be determined using the total data rate GR minus the data rates for the other services 1..K-1. Advantageously, the service K is the one with the highest number of different transport formats. This gives the greatest reduction in required binary symbols for the coding.

The total data rate GR is transmitted as resource allocation (spread code, spread factor, time slot) in a rapid monitoring channel FACH accompanying the connection, or is obtained from the signals themselves by the reception end using blind detection.

The in-band signaling of the partial information item TFCI is carried out as shown in Figure 7. Within transmission of data (data) in frames together with

other information, capacity is also provided for transmitting the currently chosen

combination of the transport formats in the form of the partial information item TFCI. In FDD mode, a frame lasts 10 ms, with bits of a pilot sequence (pilot) being used for channel estimation, bits (pc) being required for transmission power regulation, and bits being reserved for in-band signaling of the TFCI. There is then a data component data containing useful information. Error protection coding of the TFCI on 32 bits, for example, and scrambling of the useful information over a plurality of frames are not shown in Figure 7.

The description of the chosen transport formats applies for one transmission direction. In a connection, data can naturally be transmitted in both transmission directions (UL upward direction from the mobile station MS to the base station BS, and DL downward direction from the base station BS to the mobile station MS), and different transport formats TF can be stipulated for the data rates in an entirely asymmetrical and appropriate manner.

Patent claims

1. A method for transmitting data for a combination of a plurality of services (S) via jointly used physical channels (Phy CH), in which

- a quantity of permitted transport formats (TF) is stipulated for each of the services (S),
- a combination of the currently used transport formats (TF) for the services (S) is stipulated,
- a partial information item (TFCI) relating to the combination of the currently used transport formats (TF) is signaled, the partial information item (TFCI) using a binary coding having a number of places which is reduced in comparison with the total amount of the permitted combinations,
- the data for the services (S) are transmitted via a jointly used physical channel (PhyCH) on the basis of the combination,

at the reception end

- a total data rate (GR) for the combination of the services is determined,
- the combination of the currently used transport formats (TF) is ascertained from the total data rate (GR) and the partial information item (TFCI), and
- the data are evaluated on the basis of the combination ascertained.

2. The method as claimed in claim 1, in which the total data rate (GR) is signaled separately.

3. The method as claimed in claim 1, in which the total data rate (GR) is derived from a resource allocation for the data transmission.

4. The method as claimed in claim 1, in which the total data rate (GR) is derived from resources associated with the resource use.

5. The method as claimed in one of the preceding claims, in which
the total data rate (GR) indicates a bit or symbol rate before or after a channel coding.

6. The method as claimed in one of the preceding claims, in which
the partial information item (TFCI) is transmitted in each frame (FR) of the data transmission of the common physical channel or of the physical channels (Phy CH).

7. The method as claimed in one of the preceding claims, in which
the data for a plurality of services (S) are mapped onto a coded common transport channel (CCTrCH), and the data of the coded common transport channel (CCTrCH) are in turn split uniformly over a plurality of physical channels (Phy CH).

8. The method as claimed in one of the preceding claims, in which
the data transmission takes place via a radio interface of a radio communication system.

9. The method as claimed in claim 8, in which
the radio interface is formed by a broadband frequency channel, with signals being transmitted simultaneously in a plurality of channels (Phy CH) which can be separated by spread codes and, if appropriate, additionally by time slots.

10. A communication system
having data transmission means for transmitting data for a combination of a plurality of services (S) via jointly used physical channels, where a quantity of permitted transport formats (TF) and a combination of the currently used transport formats (TF) for the services (S) are stipulated for each of the services (S),

having signaling means which signal a partial information item (TFCI) relating to the combination of the currently used transport formats (TF), the partial information item (TFCI)

using a binary coding having a number of places which is reduced in comparison with the total amount of the permitted combinations,

having reception means

- for determining a total data rate (GR) for the combination of the services, and
- for determining the combination of the currently used transport formats (TF) from the total data rate (GR) and the partial information item (TFCI), so that the data are evaluated on the basis of the combination ascertained.

GR 98 P 5845

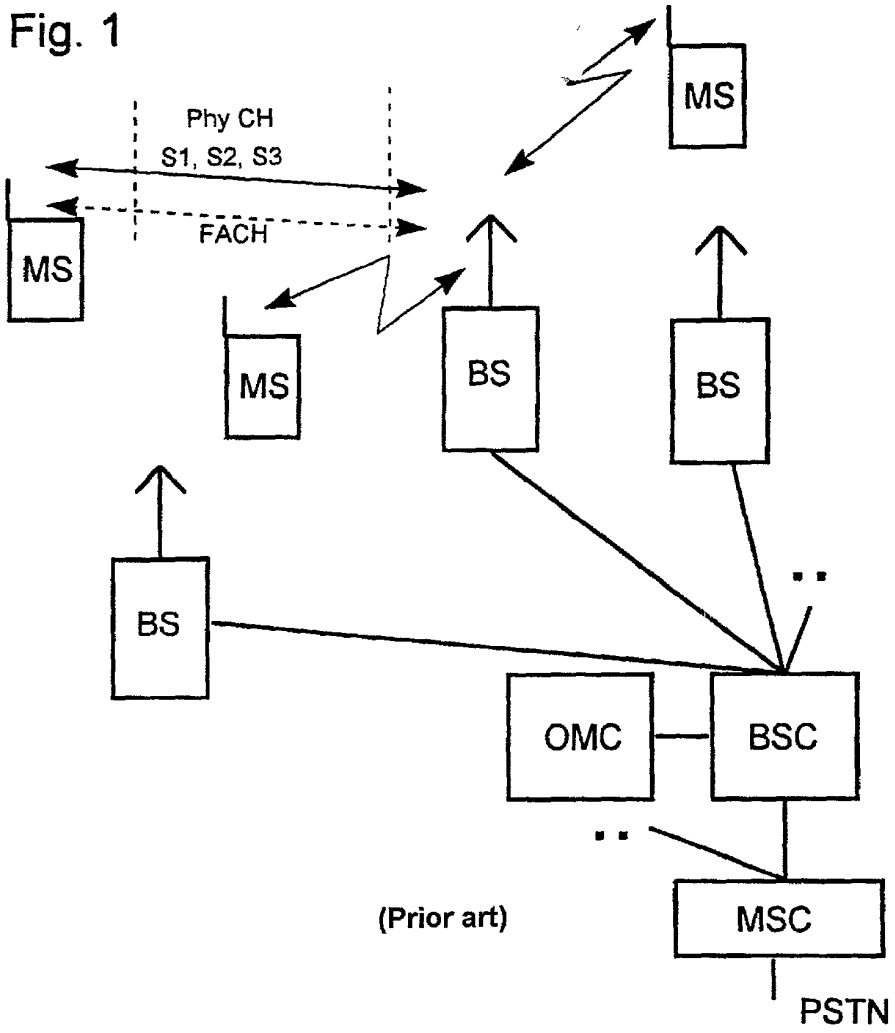
Abstract

Method and communication system for transmitting data for a combination of a plurality of services via jointly used physical channels

To reduce in-band signaling complexity, the invention utilizes the fact that, irrespective of a current combination of the transport formats for various services transmitted via jointly used physical channels, a total data rate for all services is known to the receiver. This total data rate is obtained from a previous resource allocation (number of spread codes and/or time slots, spread factor etc.), as a result of "blind detection" at the reception end (establishment of the data rate or of the spread factor) during detection or as a result of reception-end recognition of the currently used resources within the pool of allocated resources. The particular total data rate is an implicitly available information item for the combination of the transport formats, since only particular combinations are possible for a given total data rate. The invention can be used in UMTS mobile radio systems.

Figure 5

Fig. 1



(Prior art)

Fig. 7

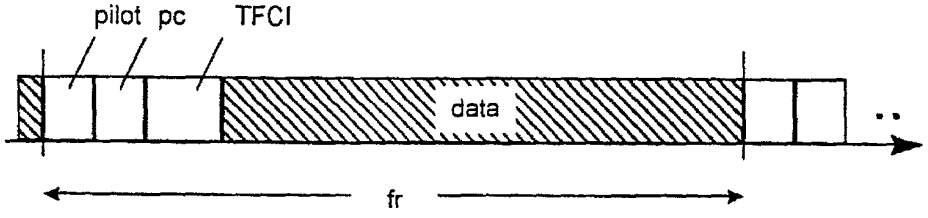


Fig. 2

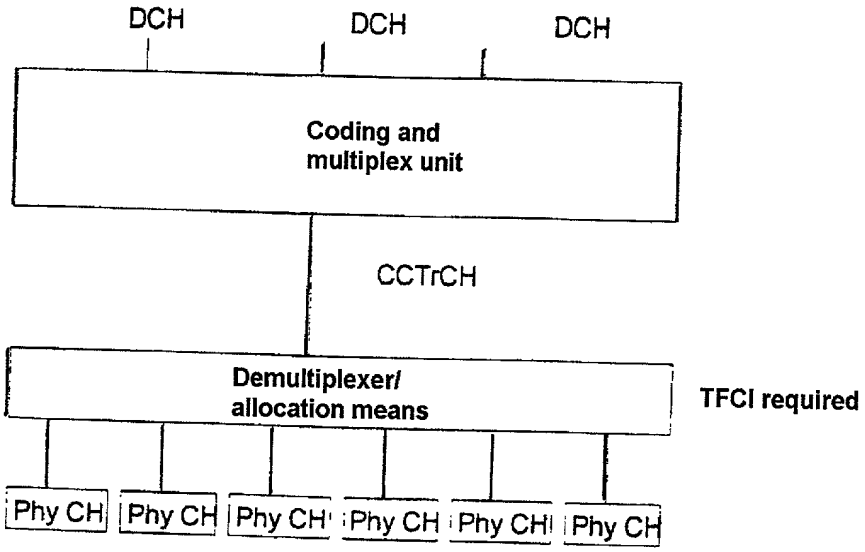


Fig. 3

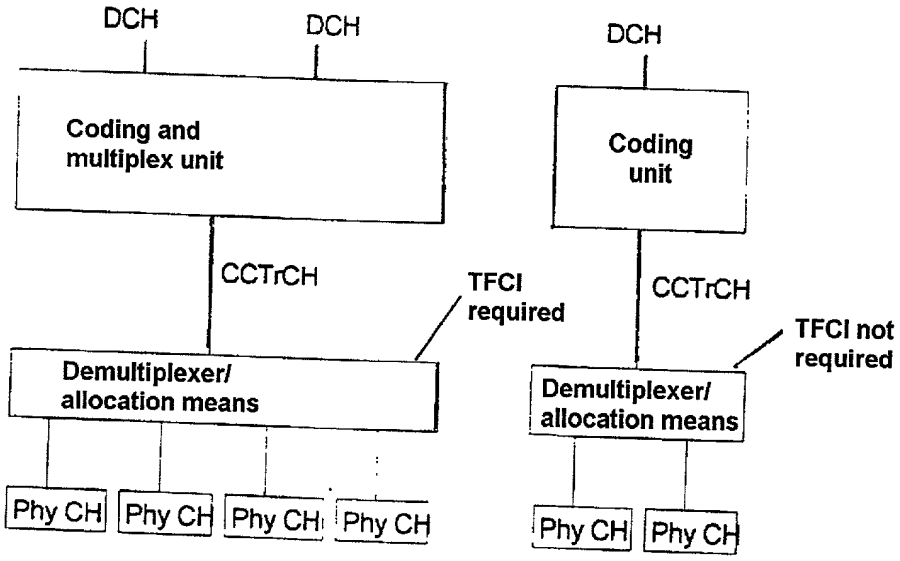


Fig. 4

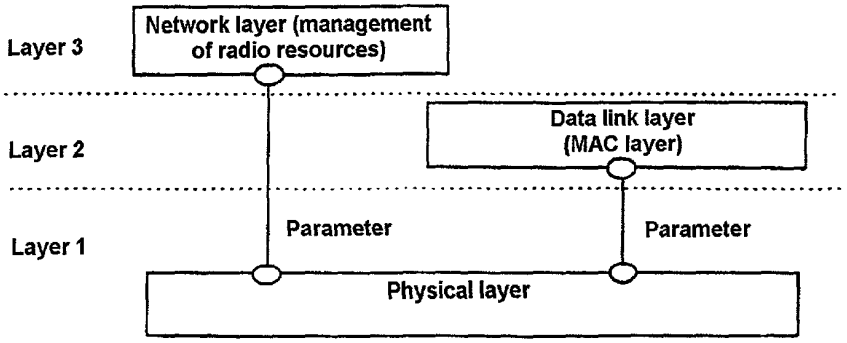


Fig. 5

TFCI	GR	TFC
000000	-	TFC0
000001	GR1	TFC1
000001	GR2	TFC2
000010	-	TFC3
000011	GR1	TFC4
000011	GR2	TFC5
000100	-	TFC6
000101	GR1	TFC0
..	..	..

Fig. 6

TFCI	GR	TFC
0	1	TF11+TF21
0	2	TF11+TF22
0	3	TF11+TF23
0	4	TF11+TF24
0	2	TF12+TF21
1	3	TF12+TF22
1	4	TF12+TF23
1	5	TF12+TF24

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Verfahren und Kommunikationssystem zur Übertragung von Daten einer Kombination mehrerer Dienste über gemeinsam genutzte physikalische Kanäle

deren Beschreibung

(zutreffendes ankreuzen)

☒ hier beigefügt ist.

☐ am _____ als PCT internationale Anmeldung PCT Anmeldungsnummer _____ eingereicht wurde und am _____ abgeändert wurde (falls tatsächlich abgeändert).

the specification of which

(check one)

☐ is attached hereto.

☐ was filed on _____ as PCT international application PCT Application No. _____ and was amended on _____ (if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

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Prior foreign appplications
Priorität beansprucht

Priority Claimed

(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein
981 22 719.2.	Germany	30. November 1998	☒	☐
			☐	☐
			☐	☐

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35. United States Code. §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occured between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgegeben)	(Status) (patented, pending, abandoned)

(Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgeben)	(Status) (patented, pending, abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: *(Name und Registrationsnummer anführen)*

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

And I hereby appoint

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(Supply similar information and signature for third and subsequent joint inventors).